SEQUENCE LISTING

<110> CHUGAI SEIYAKU KABUSHIKI KAISHA

<120> BISPECIFIC ANTIBODY SUBSTITUTING FOR FUNCTIONAL PROTEINS

<130> C1-A0313P2

<140> PCT/JP2003/013123

<141> 2003-10-14

<160> 82

<170> PatentIn version 3.1

<210> 1

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<212> PRT

<213> Homo sapiens

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Gln Val Gln Leu Lys Gln Ser Gly Ala Glu Leu Val Arg Pro Gly Ala
1 5 10 15

Ser Val Arg Leu Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Phe Tyr
20 25 30

Trp Ile Asn Trp Ile Lys Gln Arg Pro Glu Gln Gly Leu Glu Trp Ile
35 40 45

Gly Arg Ile Asp Pro Tyr Asp Ser Glu Thr Arg Tyr Asn Gln Lys Phe
50 55 60

Lys Asp Lys Ala Ile Leu Thr Val Asp Lys Tyr Ser Ser Thr Ala Tyr
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95

Ala Lys Gly Val Tyr Asp Gly His Trp Phe Phe Asp Val Trp Gly Ala
100 105 110

Gly Thr Ser Val Thr Val Ser Ser
115 120

<210> 2

<211> 108

<212> PRT

<213> Homo sapiens

<400> 2

Asp Ile Val Met Thr Gln Ser His Lys Phe Met Ser Thr Ser Val Gly

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Asp Arg Val Ser Ile Thr Cys Lys Ala Ser Gln Asp Val Ser Thr Ala
20 25 30

Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile
35 40 45

Tyr Ser Ala Ser Tyr Arg Tyr Thr Gly Val Pro Ala Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Val Gln Thr
65 70 75 80

Glu Asp Leu Ala Val Tyr Tyr Cys Gln Gln His Tyr Arg Thr Pro Pro
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Leu Lys Arg
100 105

<210> 3

<211> 119

<212> PRT

<213> Homo sapiens

<400> 3

Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Glu Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Ser Phe Ser Asp Tyr
20 25 30

Asn Met Asn Trp Val Lys Gln Ser Asn Gly Lys Ser Leu Glu Trp Ile
35 40 45

Gly Asn Ile Asp Pro Tyr Asn Gly Asp Thr Asn Tyr Asn Gln Lys Phe
50 55 60

Lys Gly Lys Ala Thr Leu Thr Leu Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

Met Gln Leu Lys Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Phe Cys
85 90 95

Ala Arg Ser Arg Gly Trp Leu Leu Pro Phe Ala Tyr Trp Gly Gln Gly
100 105 110

Thr Leu Val Thr Val Ser Ala
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<210> 4

<211> 108

<212> PRT

<213> Homo sapiens

<400> 4

Asp Ile Leu Met Thr Gln Ser Gln Lys Phe Met Ser Thr Ser Val Gly
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Asp Arg Val Ser Val Thr Cys Lys Ala Ser Gln Asn Val Gly Ile Asn
20 25 30

Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys Ala Leu Ile
35 40 45

Tyr Ser Ala Ser Tyr Arg Tyr Ser Gly Val Pro Asp Arg Phe Thr Gly
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Asn Val Gln Ser
65 70 75 80

Glu Asp Leu Ala Glu Tyr Phe Cys Gln Gln Tyr Asn Ser Tyr Pro Leu
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
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<210> 5

<211> 117

<212> PRT

<213> Homo sapiens

<400> 5

Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Arg Pro Gly Val
1 5 10 15

Ser Val Lys Ile Ser Cys Lys Gly Ser Gly Tyr Thr Phe Thr Asp Tyr
20 25 30

Ala Ile His Trp Val Arg Gln Ser His Ala Gln Ser Leu Glu Trp Ile
35 40 45

Gly Val Ile Gly Thr Tyr Ser Gly Asn Arg Asn Tyr Asn Gln Lys Phe
50 55 60

Lys Gly Lys Ala Thr Met Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Ala Arg Leu Thr Ser Glu Asp Ser Ala Ile Tyr Tyr Cys
85 90 95

Ala Arg Ser Ala Gly Tyr Ser Leu Asp Phe Trp Gly Gln Gly Thr Ser
100 105 110

Val Thr Val Ser Ser
115

<210> 6

<211> 112

<212> PRT

<213> Homo sapiens

<400> 6

Asp Val Val Met Thr Gln Thr Pro Leu Thr Leu Ser Val Thr Ile Gly
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Gln Pro Ala Ser Ile Ser Cys Lys Ser Ser Gln Ser Leu Leu Asp Ser
20 25 30

Asp Gly Lys Thr Tyr Leu Asn Trp Leu Leu Gln Arg Pro Gly Gln Ser
35 40 45

Pro Lys Arg Leu Ile Tyr Leu Val Ser Lys Leu Asp Ser Gly Val Pro
50 55 60

Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65 70 75 80

Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Tyr Cys Trp Gln Gly
85 90 95

Lys His Phe Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
100 105 110

<210> 7

<211> 119

<212> PRT

<213> Homo sapiens

<400> 7

Gln Val Gln Leu Gln Gln Ser Gly Gly Glu Leu Val Arg Pro Gly Thr
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Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asn Tyr
20 25 30

Leu Ile Glu Trp Ile Arg Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45

Gly Val Ile Asn Pro Gly Ser Gly Asn Ser Lys Ser Ser Lys Asn Leu
50 55 60

Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Asn Thr Ala Tyr
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Asp Asp Ser Ala Val Tyr Phe Cys

85 90 95

Ala Arg Ser Gly Val Tyr Gly Ser Ser Pro Asp Tyr Trp Gly Gln Gly
100 105 110

Thr Thr Leu Thr Val Ser Ser
115

<210> 8
<211> 113
<212> PRT
<213> Homo sapiens

<400> 8
Asp Val Val Met Thr Gln Thr Pro Leu Thr Leu Ser Val Thr Ile Gly
1 5 10 15

Gln Pro Ala Ser Ile Ser Cys Lys Ser Ser Gln Ser Leu Leu Asp Ser
20 25 30

Asp Gly Lys Thr Tyr Leu Asn Trp Leu Leu Gln Arg Pro Gly Gln Ser
35 40 45

Pro Lys Arg Leu Ile Tyr Leu Val Ser Lys Leu Asp Ser Gly Val Pro
50 55 60

Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65 70 75 80

Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Tyr Cys Trp Gln Gly
85 90 95

Thr His Phe Pro Gln Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
100 105 110

Arg

<210> 9
<211> 118
<212> PRT
<213> Homo sapiens

<400> 9
Gln Val Gln Leu Gln Gln Ser Gly Gly Glu Leu Val Arg Pro Gly Thr
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asn Tyr
20 25 30

Leu Ile Glu Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Asp Trp Ile
35 40 45

Gly Met Ile Asn Pro Gly Ser Gly Gly Thr Lys Cys Asn Lys Lys Phe
50 55 60

Lys Gly Lys Val Thr Leu Thr Ala Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

Met His Leu Ser Ser Leu Thr Ser Asp Asp Ser Ala Val Tyr Phe Cys
85 90 95

Ala Arg Ser Gly Trp Val Ser Ala Met Asp Tyr Trp Gly Gln Gly Thr
100 105 110

Ser Val Thr Val Ser Ser
115

<210> 10
<211> 113
<212> PRT
<213> Homo sapiens

<400> 10
Asp Ile Val Met Thr Gln Thr Pro Leu Thr Leu Ser Val Thr Ile Gly
1 5 10 15

Gln Pro Ala Ser Ile Ser Cys Lys Ser Ser Gln Ser Leu Leu Asp Ser

20 25 30

Asp Gly Lys Thr Tyr Leu Asn Trp Leu Leu Gln Arg Pro Gly Gln Ser
35 40 45

Pro Lys Arg Leu Ile Tyr Leu Val Ser Lys Leu Asp Ser Gly Val Pro
50 55 60

Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65 70 75 80

Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Tyr Cys Trp Gln Gly
85 90 95

Thr His Phe Pro Gln Thr Phe Gly Gly Gly Thr Lys Leu Glu Leu Lys
100 105 110

Arg

<210> 11

<211> 118

<212> PRT

<213> Homo sapiens

<400> 11

Gln Val Gln Leu Gln Gln Ser Gly Val Glu Leu Val Arg Pro Gly Thr
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asn Tyr
20 25 30

Leu Ile Glu Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Asp Trp Ile
35 40 45

Gly Met Ile Asn Pro Gly Ser Gly Gly Thr Lys Cys Asn Lys Lys Phe
50 55 60

Lys Gly Lys Val Thr Leu Thr Ala Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

Met His Leu Ser Ser Leu Thr Ser Asp Asp Ser Ala Val Tyr Phe Cys
85 90 95

Ala Arg Ser Gly Trp Val Tyr Ala Met Asp Tyr Trp Gly Gln Gly Thr
100 105 110

Ser Val Thr Val Ser Ser
115

<210> 12

<211> 113

<212> PRT

<213> Homo sapiens

<400> 12

Asp Val Leu Met Thr Gln Thr Pro Leu Thr Leu Ser Val Thr Ile Gly
1 5 10 15

Gln Pro Ala Ser Ile Ser Cys Lys Ser Ser Gln Ser Leu Leu Asp Ser
20 25 30

Asp Gly Lys Thr Tyr Leu Asn Trp Leu Leu Gln Arg Pro Gly Gln Ser
35 40 45

Pro Lys Arg Leu Ile Tyr Leu Val Ser Lys Leu Asp Ser Gly Val Pro
50 55 60

Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65 70 75 80

Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Tyr Cys Trp Gln Gly
85 90 95

Thr His Phe Pro Gln Thr Phe Gly Gly Gly Thr Lys Leu Glu Leu Lys
100 105 110

Arg

<210> 13

<211> 117

<212> PRT

<213> Homo sapiens

<400> 13

Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Arg Pro Gly Val
1 5 10 15

Ser Val Lys Ile Ser Cys Lys Gly Ser Gly Tyr Arg Phe Thr Asp Tyr
20 25 30

Ala Ile His Trp Val Lys Gln Ser His Ala Lys Ser Leu Glu Trp Ile
35 40 45

Gly Val Ile Ser Thr Tyr Tyr Gly Asn Thr Arg Tyr Asn Gln Lys Phe
50 55 60

Lys Gly Lys Ala Thr Met Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Ala Ser Leu Thr Ser Glu Asp Ser Val Ile Tyr Tyr Cys
85 90 95

Ala Arg Ser Gly Gly Ser Leu Met Asp Tyr Trp Gly Gln Gly Thr Ser
100 105 110

Val Thr Val Ser Ser
115

<210> 14
<211> 113
<212> PRT
<213> Homo sapiens

<400> 14
Asp Ile Val Met Thr Gln Thr Pro Leu Thr Leu Ser Val Thr Ile Gly
1 5 10 15

Gln Pro Ala Ser Ile Ser Cys Lys Ser Ser Gln Ser Leu Leu Asp Ser
20 25 30

Asp Gly Lys Thr Tyr Leu Asn Trp Leu Leu Gln Arg Pro Gly Gln Ser
35 40 45

Pro Lys Arg Leu Ile Tyr Leu Val Ser Lys Leu Asp Ser Gly Val Pro
50 55 60

Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65 70 75 80

Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Tyr Cys Trp Gln Gly
85 90 95

Thr His Phe Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
100 105 110

Arg

<210> 15

<211> 117

<212> PRT

<213> Homo sapiens

<400> 15

Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Arg Pro Gly Val
1 5 10 15

Ser Val Lys Ile Ser Cys Lys Gly Ser Gly Tyr Thr Phe Thr Asp Tyr
20 25 30

Ala Met His Trp Val Lys Gln Ser His Ala Lys Ser Leu Glu Trp Ile
35 40 45

Gly Val Ile Ser Thr Tyr Tyr Ser Asn Thr Arg Tyr Asn Gln Lys Phe

50 55 60

Lys Gly Lys Ala Thr Met Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Ala Arg Leu Thr Ser Glu Asp Ser Ala Ile Tyr Tyr Cys
85 90 95

Val Arg Ser Gly Gly Ser Asn Met Asp Tyr Trp Gly Gln Gly Thr Ser
100 105 110

Val Thr Val Ser Ser
115

<210> 16
<211> 113
<212> PRT
<213> Homo sapiens

<400> 16
Asp Ile Gln Met Thr Gln Thr Pro Leu Thr Leu Ser Val Thr Ile Gly
1 5 10 15

Gln Pro Ala Ser Ile Ser Cys Lys Ser Ser Gln Ser Leu Leu Asp Ser
20 25 30

Asp Gly Lys Thr Tyr Leu Asn Trp Leu Leu Gln Arg Pro Gly Gln Ser
35 40 45

Pro Lys Arg Leu Ile Tyr Leu Val Ser Lys Leu Asp Ser Gly Val Pro
50 55 60

Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65 70 75 80

Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Tyr Cys Trp Gln Gly
85 90 95

Thr His Phe Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
100 105 110

Arg

<210> 17

<211> 117

<212> PRT

<213> Homo sapiens

<400> 17

Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Arg Pro Gly Val
1 5 10 15

Ser Val Lys Ile Ser Cys Lys Gly Ser Ser Tyr Lys Phe Thr Asp Tyr
20 25 30

Ala Met His Trp Val Lys Gln Ser His Ala Lys Ser Leu Glu Trp Ile
35 40 45

Gly Val Ile Ser Thr Tyr Tyr Gly Asn Val Lys Tyr Asn Gln Lys Phe
50 55 60

Lys Gly Lys Ala Thr Met Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Ala Arg Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Ser Ser Gly Ser Tyr Leu Asp Tyr Trp Gly Gln Gly Thr Ser
100 105 110

Val Thr Val Ser Ser
115

<210> 18

<211> 113

<212> PRT

<213> Homo sapiens

<400> 18

Asp Ile Val Met Thr Gln Thr Pro Leu Thr Leu Ser Val Thr Ile Gly
1 5 10 15

Gln Pro Ala Ser Ile Ser Cys Lys Ser Ser Gln Ser Leu Leu Asp Ser
20 25 30

Asp Gly Lys Thr Tyr Leu Asn Trp Leu Leu Gln Arg Pro Gly Gln Ser
35 40 45

Pro Lys Arg Leu Ile Tyr Leu Val Ser Lys Leu Asp Ser Gly Val Pro
50 55 60

Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65 70 75 80

Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Tyr Cys Trp Gln Gly
85 90 95

Thr His Phe Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
100 105 110

Arg

<210> 19

<211> 119

<212> PRT

<213> Homo sapiens

<400> 19

Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Arg Pro Gly Thr
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asn Tyr
20 25 30

Leu Ile Glu Trp Val Lys Gln Arg Pro Gly Gln Gly Pro Glu Trp Ile
35 40 45

Gly Val Ile Asn Pro Gly Ser Gly Asn Ile Arg Tyr Asn Gly Lys Phe
50 55 60

Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Asp Asp Ser Ala Val Tyr Phe Cys
85 90 95

Ala Arg Asp Ala Tyr Tyr Val Gly Ala Met Asp Tyr Trp Gly Gln Gly
100 105 110

Thr Ser Val Thr Val Ser Ser
115

<210> 20

<211> 113

<212> PRT

<213> Homo sapiens

<400> 20

Asp Val Val Met Thr Gln Thr Pro Leu Thr Leu Ser Val Thr Ile Gly
1 5 10 15

Gln Pro Ala Ser Ile Ser Cys Lys Ser Ser Gln Ser Leu Leu Asp Ser
20 25 30

Asp Gly Lys Thr Tyr Leu Asn Trp Leu Leu Gln Arg Pro Gly Gln Ser
35 40 45

Pro Lys Arg Leu Ile Tyr Leu Val Ser Lys Leu Asp Ser Gly Val Pro
50 55 60

Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65 70 75 80

Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Tyr Cys Trp Gln Gly

85 90 95

Thr His Phe Pro Gln Thr Phe Gly Gly Gly Thr Lys Leu Glu Leu Lys

100 105 110

Arg

<210> 21

<211> 119

<212> PRT

<213> Homo sapiens

<400> 21

Gln Val Gln Leu Gln Gln Ser Glu Ala Glu Leu Val Arg Pro Glu Thr

1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ser Phe Arg Asn Tyr

20 25 30

Leu Ile Glu Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile

35 40 45

Gly Val Ile Asn Pro Gly Ser Gly Asn Thr Lys Tyr Asn Glu Lys Phe

50 55 60

Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Asp Asp Ser Ala Val Tyr Phe Cys
85 90 95

Ala Arg Asp Gly Tyr Tyr Leu Gly Thr Met Asp Tyr Trp Gly Gln Gly
100 105 110

Thr Ser Val Thr Val Ser Ser
115

<210> 22
<211> 113
<212> PRT
<213> Homo sapiens

<400> 22
Asp Ile Val Leu Thr Gln Thr Pro Leu Thr Leu Ser Val Thr Ile Gly
1 5 10 15

Gln Pro Ala Ser Ile Ser Cys Lys Ser Ser Gln Ser Leu Leu Asp Ser
20 25 30

Asp Gly Lys Thr Tyr Leu Asn Trp Leu Leu Gln Arg Pro Gly Gln Ser
35 40 45

Pro Lys Arg Leu Ile Tyr Leu Val Ser Lys Leu Asp Ser Gly Val Pro
50 55 60

Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65 70 75 80

Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Tyr Cys Trp Gln Gly
85 90 95

Thr His Phe Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
100 105 110

Arg

<210> 23
<211> 119
<212> PRT
<213> Homo sapiens

<400> 23
Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Arg Pro Gly Thr
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ala Phe Ile Asn Asn

20 25 30

Leu Ile Glu Trp Val Gln Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45

Gly Val Ile Asn Pro Gly Ser Gly Asn Val Lys Tyr Asn Glu Lys Phe
50 55 60

Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Asp Asp Ser Ala Val Tyr Phe Cys
85 90 95

Ala Arg Asp Gly Tyr Tyr Leu Gly Thr Met Asp His Trp Gly Gln Gly
100 105 110

Thr Ser Val Thr Val Ser Ser
115

<210> 24
<211> 113
<212> PRT
<213> Homo sapiens

<400> 24

Asp Val Val Met Thr Gln Thr Pro Leu Thr Leu Ser Val Thr Ile Gly
1 5 10 15

Gln Pro Ala Ser Ile Ser Cys Lys Ser Ser Gln Ser Leu Leu Asp Ser
20 25 30

Asp Gly Lys Thr Tyr Leu Asn Trp Leu Leu Gln Arg Pro Gly Gln Ser
35 40 45

Pro Lys Arg Leu Ile Tyr Leu Val Ser Lys Leu Asp Ser Gly Val Pro
50 55 60

Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65 70 75 80

Ser Arg Val Glu Ala Glu Asp Leu Gly Ile Tyr Tyr Cys Trp Gln Gly
85 90 95

Thr His Phe Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Leu Lys
100 105 110

Arg

<210> 25

<211> 117

<212> PRT

<213> Homo sapiens

<400> 25

Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Arg Pro Gly Val
1 5 10 15

Ser Val Lys Ile Ser Cys Lys Gly Ser Ser Tyr Lys Phe Thr Asp Tyr
20 25 30

Ala Met His Trp Val Lys Gln Ser His Ala Lys Ser Leu Glu Trp Ile
35 40 45

Gly Val Ile Ser Thr Tyr Tyr Gly Asn Val Lys Tyr Asn Gln Lys Phe
50 55 60

Lys Gly Lys Ala Thr Met Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Ala Arg Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Ser Tyr Gly Ser Tyr Leu Asp Tyr Trp Gly Gln Gly Thr Ser
100 105 110

Val Thr Val Ser Ser

115

<210> 26

<211> 112

<212> PRT

<213> Homo sapiens

<400> 26

Asp Ile Val Met Thr Gln Thr Pro Leu Thr Leu Ser Val Thr Ile Gly
1 5 10 15

Gln Pro Ala Ser Ile Ser Cys Lys Ser Ser Gln Ser Leu Leu Asp Ser
20 25 30

Asp Gly Lys Thr Tyr Leu Asn Trp Leu Leu Gln Arg Pro Gly Gln Ser
35 40 45

Pro Lys Arg Leu Ile Tyr Leu Val Ser Lys Leu Asp Ser Gly Val Pro
50 55 60

Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65 70 75 80

Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Tyr Cys Trp Gln Gly
85 90 95

Thr His Phe Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
100 105 110

<210> 27

<211> 22

<212> DNA

<213> Artificial

<220>

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<400> 27

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<210> 28

<211> 23

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized primer sequence

<400> 28

cttttcataa tcaaaatcac cgg 23

<210> 29

<211> 19

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized primer sequence

<400> 29

attgcctacg gcagccgct 19

<210> 30

<211> 20

<212> DNA

<213> Artificial

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<223> an artificially synthesized primer sequence

<400> 30

aaatcaccgg aaccagagcc 20

<210> 31

<211> 24

<212> DNA

<213> Artificial

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<223> an artificially synthesized primer sequence

<400> 31

ttactcgcgg cccagccggc catg 24

<210> 32

<211> 28

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized primer sequence

<400> 32

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<210> 33

<211> 1215

<212> DNA

<213> Homo sapiens

<400> 33

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cactggacgc tgaacctcgc ggacagttaa gaacccaggg gcctctgcgc cctgggccca 180

gctctgtccc acaccgcggt cacatggcac cacctctctt gcagcttcca ccaagggccc 240

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cagcgtggtg accgtgccct ccagcagctt gggcacgaag acctacacct gcaacgtaga 480

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caccgtcctg caccaggact ggctgaacgg caaggagtac aagtgcaagg tctccaacaa 840

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taaatgagcg gccgc 1215

<210> 34

<211> 684

<212> DNA

<213> Homo sapiens

<400> 34

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tcaaaacatc aagattttaa atacgcttct tggtctcctt gctataatta tctgggataa 240

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ctacgcctgc gaagtcaccc atcagggcct gagctcgccc gtcacaaaga gcttcaacag 660

gggagagtgt tagagggcgg ccgc 684

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<211> 1215

<212> DNA

<213> Homo sapiens

<400> 35

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gagccaggaa gaccccgagg tccagttcaa ctggtacgtg gatggcgtgg aggtgcataa 720

tgccaagaca aagccgcggg aggagcagtt caacagcacg taccgtgtgg tcagcgtcct 780

caccgtcctg caccaggact ggctgaacgg caaggagtac aagtgcaagg tctccaacaa 840

aggcctcccg tcctccatcg agaaaaccat ctccaaagcc aaagggcagc cccgagagcc 900

acaggtgtac accctgcccc catcccagtg cgagatgacc aagaaccagg tcagcctgtc 960

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gccggagaac aactacaaga ccacgcctcc cgtgctggac tccgacggct ccttcttcct 1080

cgtgagcagg ctaaccgtgg acaagagcag gtggcaggag gggaatgtct tctcatgctc 1140

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<210> 36

<211> 21

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<220>

<223> an artificially synthesized primer sequence

<400> 36

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<211> 18

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<220>

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<400> 37

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<210> 38

<211> 24

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized primer sequence

<400> 38

ctctgaatac tttcaacaag ttac 24

<210> 39

<211> 116

<212> PRT

<213> Mus musculus

<400> 39

Met Glu Val Gln Leu Gln Gln Ser Gly Pro Gly Leu Val Lys Pro Thr
1 5 10 15

Gln Ser Leu Ser Leu Thr Cys Ser Val Thr Gly Tyr Ser Ile Thr Ser
20 25 30

Gly Tyr Tyr Trp Thr Trp Ile Arg Gln Phe Pro Gly Asn Asn Leu Glu
35 40 45

Trp Ile Gly Tyr Ile Ser Phe Asp Gly Thr Asn Asp Tyr Asn Pro Ser
50 55 60

Leu Lys Asn Arg Ile Ser Ile Thr Arg Asp Thr Ser Glu Asn Gln Phe
65 70 75 80

Phe Leu Lys Leu Asn Ser Val Thr Thr Glu Asp Thr Ala Thr Tyr Tyr
85 90 95

Cys Ala Arg Gly Pro Pro Cys Thr Tyr Trp Gly Gln Gly Thr Leu Val
100 105 110

Thr Val Ser Ala
115

<210> 40

<211> 6

<212> PRT

<213> Mus musculus

<400> 40

Ser Gly Tyr Tyr Trp Thr

1 5

<210> 41

<211> 16

<212> PRT

<213> Mus musculus

<400> 41

Tyr Ile Ser Phe Asp Gly Thr Asn Asp Tyr Asn Pro Ser Leu Lys Asn

1 5 10 15

<210> 42

<211> 6

<212> PRT

<213> Mus musculus

<400> 42

Gly Pro Pro Cys Thr Tyr

1 5

<210> 43

<211> 120

<212> PRT

<213> Mus musculus

<400> 43

Met Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Arg Pro Gly
1 5 10 15

Ala Ser Val Lys Leu Ser Cys Thr Ala Ser Gly Phe Asn Ile Lys Asp
20 25 30

Asp Tyr Val His Trp Val Lys Gln Arg Pro Glu Gln Gly Leu Glu Trp
35 40 45

Ile Gly Arg Ile Asp Pro Ala Asp Gly Lys Thr Lys Tyr Ala Pro Lys
50 55 60

Phe Gln Asp Lys Ala Thr Met Thr Ser Asp Thr Ser Ser Asn Thr Ala
65 70 75 80

Tyr Leu Gln Leu Ser Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr
85 90 95

Cys Val Arg Trp Arg Ile Tyr Tyr Gly Leu Met Asp Tyr Trp Gly Gln
100 105 110

Gly Thr Ser Val Thr Val Ser Ser
115 120

<210> 44
<211> 5
<212> PRT
<213> Mus musculus

<400> 44
Asp Asp Tyr Val His
1 5

<210> 45
<211> 17
<212> PRT
<213> Mus musculus

<400> 45
Arg Ile Asp Pro Ala Asp Gly Lys Thr Lys Tyr Ala Pro Lys Phe Gln
1 5 10 15

Asp

<210> 46
<211> 10

<212> PRT

<213> Homo sapiens

<400> 46

Trp Arg Ile Tyr Tyr Gly Leu Met Asp Tyr

1 5 10

<210> 47

<211> 123

<212> PRT

<213> Mus musculus

<400> 47

Met Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly

1 5 10 15

Ala Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr His

20 25 30

Phe Val Leu His Trp Val Lys Gln Asn Pro Gly Gln Gly Leu Glu Trp

35 40 45

Ile Gly Tyr Ile Ile Pro Tyr Asn Asp Gly Thr Lys Tyr Asn Glu Lys

50 55 60

Phe Lys Gly Lys Ala Thr Leu Thr Ser Asp Lys Ser Ser Ser Thr Ala

65 70 75 80

Tyr Met Glu Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr
85 90 95

Cys Ala Arg Gly Asn Arg Tyr Asp Val Gly Ser Tyr Ala Met Asp Tyr
100 105 110

Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser
115 120

<210> 48
<211> 5
<212> PRT
<213> Mus musculus

<400> 48
His Phe Val Leu His
1 5

<210> 49
<211> 17
<212> PRT
<213> Mus musculus

<400> 49

Tyr Ile Ile Pro Tyr Asn Asp Gly Thr Lys Tyr Asn Glu Lys Phe Lys
1 5 10 15

Gly

<210> 50
<211> 13
<212> PRT
<213> Mus musculus

<400> 50
Gly Asn Arg Tyr Asp Val Gly Ser Tyr Ala Met Asp Tyr
1 5 10

<210> 51
<211> 117
<212> PRT
<213> Mus musculus

<400> 51
Met Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Lys Pro Gly
1 5 10 15

Ala Ser Val Lys Leu Ser Cys Thr Val Ser Gly Phe Asn Ile Gln Asp
20 25 30

Asn Tyr Met His Trp Val Lys Gln Arg Pro Glu Gln Gly Leu Glu Trp
35 40 45

Ile Gly Arg Ile Asp Pro Ala Asn Gly Asn Thr Arg Tyr Asp Pro Lys
50 55 60

Phe Gln Gly Lys Ala Thr Ile Thr Ala Asp Ile Ser Ser Asn Thr Thr
65 70 75 80

Cys Leu Gln Leu Ser Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr
85 90 95

Cys Ala Ser Pro Tyr Tyr Pro Leu Gly Cys Trp Gly Gln Gly Thr Leu
100 105 110

Val Thr Val Ser Ala
115

<210> 52
<211> 5
<212> PRT
<213> Mus musculus

<400> 52
Asp Asn Tyr Met His

1 5

<210> 53

<211> 17

<212> PRT

<213> Mus musculus

<400> 53

Arg Ile Asp Pro Ala Asn Gly Asn Thr Arg Tyr Asp Pro Lys Phe Gln

1 5 10 15

Gly

<210> 54

<211> 7

<212> PRT

<213> Mus musculus

<400> 54

Pro Tyr Tyr Pro Leu Gly Cys

1 5

<210> 55

<211> 116

<212> PRT

<213> Mus musculus

<400> 55

Met Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly
1 5 10 15

Ala Ser Val Lys Ile Ser Cys Lys Thr Ser Gly Tyr Thr Phe Thr Glu
20 25 30

Asn Thr Ile Tyr Trp Val Lys Gln Ser His Gly Lys Ser Leu Glu Trp
35 40 45

Ile Gly Ser Ile Thr Thr Tyr Asn Gln Lys Phe Lys Asp Lys Ala Thr
50 55 60

Leu Thr Ile Asp Lys Ser Ser Ser Ser Ala Tyr Met Glu Leu Arg Ser
65 70 75 80

Leu Thr Ser Glu Glu Ser Ala Val Tyr Tyr Cys Ala Arg Ser Gly Gly
85 90 95

Arg Gly Lys Pro Tyr Tyr Phe Asp Ser Trp Gly Gln Gly Thr Thr Leu
100 105 110

Thr Val Ser Ser
115

<210> 56

<211> 5

<212> PRT

<213> Mus musculus

<400> 56

Glu Asn Thr Ile Tyr

1 5

<210> 57

<211> 11

<212> PRT

<213> Mus musculus

<400> 57

Ser Ile Thr Thr Tyr Asn Gln Lys Phe Lys Asp

1 5 10

<210> 58

<211> 12

<212> PRT

<213> Mus musculus

<400> 58

Ser Gly Gly Arg Gly Lys Pro Tyr Tyr Phe Asp Ser

1 5 10

<210> 59

<211> 117

<212> PRT

<213> Mus musculus

<400> 59

Met Gln Val Gln Leu Gln Gln Ser Gly Ser Glu Leu Val Lys Pro Gly
1 5 10 15

Ala Ser Val Lys Leu Ser Cys Thr Ala Ser Gly Phe Asn Ile Lys Asp
20 25 30

Asn Tyr Met His Trp Ile Lys Gln Arg Pro Glu Gln Gly Leu Glu Trp
35 40 45

Ile Gly Arg Ile Asp Pro Gly Asn Gly Asn Ser Arg Tyr Asp Pro Lys
50 55 60

Phe Gln Gly Lys Ala Thr Ile Thr Ala Asp Thr Ser Ser Asn Thr Ala
65 70 75 80

Tyr Leu Gln Leu Ser Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr
85 90 95

Cys Ala Ser Pro Tyr Tyr Pro Leu Gly Tyr Trp Gly Gln Gly Thr Leu
100 105 110

Val Thr Val Ser Ala
115

<210> 60
<211> 5
<212> PRT
<213> Mus musculus

<400> 60
Asp Asn Tyr Met His
1 5

<210> 61
<211> 17
<212> PRT
<213> Mus musculus

<400> 61
Arg Ile Asp Pro Gly Asn Gly Asn Ser Arg Tyr Asp Pro Lys Phe Gln
1 5 10 15

Gly

<210> 62

<211> 7

<212> PRT

<213> Mus musculus

<400> 62

Pro Tyr Tyr Pro Leu Gly Tyr

1 5

<210> 63

<211> 114

<212> PRT

<213> Mus musculus

<400> 63

Met Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Arg Pro Gly

1 5 10 15

Ala Ser Val Lys Leu Ser Cys Thr Val Ser Gly Phe Asn Ile Lys Asp

20 25 30

Asp Tyr Ile His Trp Val Lys Gln Arg Pro Glu Gln Gly Leu Glu Trp

35 40 45

Ile Gly Arg Ile Asp Pro Thr Asn Gly Asn Pro Ala Tyr Ala Pro Lys

50 55 60

Phe Gln Asp Lys Ala Thr Ile Thr Ala Asp Thr Ser Ser Ile Thr Ala
65 70 75 80

Tyr Leu Gln Leu Asn Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr
85 90 95

Cys Thr Gly Ser Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr Val
100 105 110

Ser Ala

<210> 64
<211> 5
<212> PRT
<213> Mus musculus

<400> 64
Asp Asp Tyr Ile His
1 5

<210> 65
<211> 17
<212> PRT

<213> Mus musculus

<400> 65

Arg Ile Asp Pro Thr Asn Gly Asn Pro Ala Tyr Ala Pro Lys Phe Gln

1 5 10 15

Asp

<210> 66

<211> 4

<212> PRT

<213> Mus musculus

<400> 66

Ser Phe Ala Tyr

1

<210> 67

<211> 114

<212> PRT

<213> Mus musculus

<400> 67

Met Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Arg Pro Gly

1 5 10 15

Ala Ser Val Lys Leu Ser Cys Thr Ala Ser Gly Phe Asn Ile Lys Asp
20 25 30

Asp Tyr Val His Trp Val Lys Gln Arg Pro Glu Gln Gly Leu Glu Trp
35 40 45

Ile Gly Arg Ile His Pro Ala Asn Gly Asn Pro Gln Tyr Ala Pro Lys
50 55 60

Phe Gln Asp Lys Ala Thr Ile Ile Ile Gly Thr Ala Ser Asn Thr Thr
65 70 75 80

Tyr Leu Gln Leu Ser Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr
85 90 95

Cys Ala Gly Pro Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr Val
100 105 110

Ser Ala

<210> 68

<211> 5

<212> PRT

<213> Mus musculus

<400> 68

Asp Asp Tyr Val His

1 5

<210> 69

<211> 17

<212> PRT

<213> Mus musculus

<400> 69

Arg Ile His Pro Ala Asn Gly Asn Pro Gln Tyr Ala Pro Lys Phe Gln

1 5 10 15

Asp

<210> 70

<211> 4

<212> PRT

<213> Mus musculus

<400> 70

Pro Phe Ala Tyr

1

<210> 71

<211> 116

<212> PRT

<213> Mus musculus

<400> 71

Met Glu Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser
1 5 10 15

Gln Ser Leu Ser Leu Thr Cys Ser Val Thr Gly Tyr Ser Ile Thr Ser
20 25 30

Asn Tyr Tyr Trp Asn Trp Ile Arg Gln Phe Pro Gly Asn Lys Leu Glu
35 40 45

Trp Met Gly Tyr Ile Asn Tyr Asp Gly Ser Asn Asn Tyr Asn Pro Ser
50 55 60

Leu Lys Asn Arg Ile Ser Ile Ser Arg Asp Thr Ser Lys Asn Gln Phe
65 70 75 80

Phe Leu Lys Leu Asn Ser Val Thr Thr Glu Asp Thr Ala Thr Tyr Tyr
85 90 95

Cys Ala Arg Gly Gly Ala Phe Thr Tyr Trp Gly Gln Gly Thr Leu Val
100 105 110

Thr Val Ser Ala
115

<210> 72
<211> 6
<212> PRT
<213> Mus musculus

<400> 72
Ser Asn Tyr Tyr Trp Asn
1 5

<210> 73
<211> 16
<212> PRT
<213> Mus musculus

<400> 73
Tyr Ile Asn Tyr Asp Gly Ser Asn Asn Tyr Asn Pro Ser Leu Lys Asn
1 5 10 15

<210> 74
<211> 6
<212> PRT
<213> Mus musculus

<400> 74

Gly Gly Ala Phe Thr Tyr
1 5

<210> 75

<211> 114

<212> PRT

<213> Mus musculus

<400> 75

Met Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly
1 5 10 15

Ala Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Ile Thr Asp
20 25 30

Asn Lys Met Asp Trp Val Lys Gln Ser His Gly Lys Ser Leu Glu Trp
35 40 45

Ile Gly Tyr Ile Ser Pro Asn Asn Gly Asp Ile Gly Tyr Asn Arg Lys
50 55 60

Phe Arg Asn Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser Thr Ala
65 70 75 80

Tyr Met Glu Leu His Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr
85 90 95

Cys Ala Arg His Arg Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr Val
100 105 110

Ser Ala

<210> 76
<211> 5
<212> PRT
<213> Mus musculus

<400> 76
Asp Asn Lys Met Asp
1 5

<210> 77
<211> 17
<212> PRT
<213> Mus musculus

<400> 77
Tyr Ile Ser Pro Asn Asn Gly Asp Ile Gly Tyr Asn Arg Lys Phe Arg
1 5 10 15

Asn

<210> 78

<211> 4

<212> PRT

<213> Mus musculus

<400> 78

His Arg Ala Tyr

1

<210> 79

<211> 121

<212> PRT

<213> Mus musculus

<400> 79

Met Asp Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Lys Pro Gly

1 5 10 15

Gly Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Thr

20 25 30

Tyr Ala Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp

35 40 45

Val Ala Tyr Ile Ser Asn Gly Gly Ala Asn Thr Tyr Tyr Pro Asp Ser
50 55 60

Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu
65 70 75 80

Tyr Leu Gln Met Ser Ser Leu Arg Ser Glu Asp Thr Ala Leu Tyr Tyr
85 90 95

Cys Ala Arg Gly Gly Tyr Arg Tyr Pro Tyr Ala Met Asp Tyr Trp Gly
100 105 110

Gln Gly Thr Ser Val Thr Val Ser Ser
115 120

<210> 80
<211> 5
<212> PRT
<213> Mus musculus

<400> 80
Thr Tyr Ala Met Ser
1 5

<210> 81

<211> 17

<212> PRT

<213> Mus musculus

<400> 81

Tyr Ile Ser Asn Gly Gly Ala Asn Thr Tyr Tyr Pro Asp Ser Val Lys

1 5 10 15

Gly

<210> 82

<211> 11

<212> PRT

<213> Mus musculus

<400> 82

Gly Gly Tyr Arg Tyr Pro Tyr Ala Met Asp Tyr

1 5 10